

This listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A method for inputting data in a character-by-character manner to a mobile communication device having a constrained keyboard with ambiguous keys, the mobile communication device also having a microphone for picking up voice input, said method comprising:
 - (a) receiving voice input from a user using the microphone, the voice input pertaining to a single character;
 - (b) detecting, substantially concurrently with said receiving (a), that one of the ambiguous keys of the keyboard has been selected by the user as a selected key;
 - (c) obtaining reference patterns associated with the selected key;
 - (d) comparing the voice input with the obtained reference patterns to produce comparison data; and
 - (e) identifying a character that was intended to be input by the user based on the comparison data.
2. (Previously Amended) A method as recited in claim 1, wherein said obtaining (c), said comparing (d) and said identifying (e) are initiated with the detection of the selected key by said detecting (b).
3. (Original) A method as recited in claim 1, wherein the selected key has a plurality of characters associated therewith, and wherein the character identified is one of the plurality of the characters associated with the selected key.
4. (Original) A method as recited in claim 3, wherein each one of the obtained reference patterns pertains to one of the plurality of characters associated with the selected key.
5. (Original) A method as recited in claim 4, wherein said identifying (e) is synchronized with the detection of the selected key by said detecting (b).

6. (Original) A method as recited in claim 1,

wherein said obtaining (c) of the reference patterns operates to select a predetermined set of reference patterns from a plurality of reference patterns, and wherein the obtained reference patterns are speech reference patterns.

7. (Original) A method as recited in claim 1, wherein the selected key has a plurality of characters associated therewith, and

wherein said identifying (e) of the character that was intended to be input by the user comprises:

determining whether one of the obtained reference patterns matches the voice input based on the comparison data; and

selecting the character from the plurality of the characters associated with the selected key in accordance with the determined one of the obtained reference patterns.

8. (Original) A method as recited in claim 1, wherein the characters comprise letters or numeric characters.

9. (Currently Amended) A computer readable medium having program code for disambiguating a key selection to a constrained input keyboard of a computing device, the key selection being ambiguous as to which a plurality of characters is to be input, said computer readable medium comprising:

program code for detecting whether an ambiguous key of the keyboard has been selected as a selected key;

program code for receiving a voice input corresponding to a single one of the characters associated with the selected key, the voice input being received substantially concurrently with the detection of the selected key; and

program code for determining the one of the characters that has been input based on the selected key and the voice input.

10. (Original) A computer readable medium as recited in claim 9, wherein the computing device is a mobile computing device having the constrained input keyboard integral thereto.

11. (Previously Amended) A computer readable medium as recited in claim 10, wherein the computing device is a mobile telephone.

12. (Original) A computer readable medium as recited in claim 10, wherein said program code for determining comprises:

program code for obtaining reference patterns associated with the selected key;

program code for comparing the voice input with the obtained reference patterns to produce comparison data; and

program code for identifying the one of the characters that has been input based on the comparison data.

13. (Previously Amended) A computer readable medium as recited in claim 12, wherein said program code for obtaining, said program code for comparing and said program code for identifying are initiated with the detection of the selected key by said program code for detecting.

b1

14. (Original) A computer readable medium as recited in claim 13, wherein the selected key has a plurality of characters associated therewith, and wherein the character identified is one of the plurality of the characters associated with the selected key.

15. (Original) A computer readable medium as recited in claim 14, wherein the computing device is a mobile computing device having the constrained input keyboard integral thereto.

16. (Previously Amended) A computer readable medium as recited in claim 15, wherein the computing device is a mobile telephone.

17. (Original) A key disambiguate system for an ambiguous key input device having a plurality of keys, with each key representing a plurality of different characters, wherein the improvement comprises completely disambiguating a user's key input of a single action on a single one of the keys through use of a user's sound input pertaining to an intended character associated with the single one of the keys.

18. (Currently Amended) A key disambiguate system as recited in claim 17, wherein the user's sound input is received substantially simultaneously with the user's key input, and wherein said key disambiguate system is internal to a mobile telephone having the ambiguous key input device.

19. (Previously Amended) A key disambiguation system, comprising:

- a microphone for picking up an analog voice input;
- an analog-to-digital converter coupled to said microphone, said analog-to-digital microphone converts the analog voice input to a digital voice input;
- a data reduction unit coupled to said analog-to-digital circuit, said data reduction unit identifies distinguishing characteristics within the digital voice input as processed voice input;
- an ambiguous key input device having a plurality of keys, each of the keys representing a plurality of different characters;
- a keyboard controller coupled to said ambiguous key input device, said keyboard controller detects a user's selection of one of the keys of said ambiguous key input device and invokes a key selection event;
- a reference sound patterns source coupled to said keyboard controller, said reference sound patterns source stores a plurality of reference sounds;
- a pattern comparison unit coupled to said data reduction unit and said reference sound patterns source, said pattern comparison unit operates to compare the processed voice input with selected ones of the reference sound patterns to produce comparison data; and
- a key determination unit coupled to said pattern comparison unit, said key determination unit operates in response to the key selection event to determine the one of the characters being input based on the comparison data.

20. (Previously Amended) A key disambiguation system as recited in claim 19, wherein said key determination unit identifies a matching one of the selected reference sound patterns, and determines the one of the characters being input from the matching of the selected reference sound patterns.

21. (Currently Amended) A mobile communication device having a constrained keyboard with ambiguous keys in a character-by-character manner, said method comprising:

a microphone configured to receive voice input from a user, the voice input pertaining to a single character;

means for detecting, substantially concurrently with the receipt of the voice input via said microphone, that one of the ambiguous keys of the keyboard has been selected by the user as a selected key;

means for obtaining reference patterns associated with the selected key;

means for comparing the voice input with the obtained reference patterns to produce comparison data; and

means for identifying a character that was intended to be input by the user based on the comparison data.

22. (Currently Amended) A method for inputting data to a mobile communication device having a constrained keyboard with ambiguous keys, the mobile communication device also having a microphone for picking up voice input, said method comprising:

(a) receiving user inputs, the user inputs including a voice input from a user using the microphone and a key selection of at least a single one of the ambiguous keys of the keyboard, the voice input pertaining to a single character corresponding to the key selection, and the voice input and the key selection being received substantially simultaneously;

(b) obtaining reference patterns associated with the key selection;

(c) comparing the voice input with the obtained reference patterns to produce comparison data; and

(d) identifying a single character that was intended to be input by the user based on the comparison data.

23. (Original) A method as recited in claim 22, wherein said identifying (d) is synchronized with the detection of the key selection.

24. (Original) A method as recited in claim 22, wherein the key selection has a plurality of characters associated therewith, and wherein the character identified is one of the plurality of the characters associated with the key selection.

25. (Original) A method as recited in claim 24, wherein each one of the obtained reference patterns pertains to one of the plurality of characters associated with the key selection.

26. (Original) A method as recited in claim 22,
wherein said obtaining (b) of the reference patterns operates to select a predetermined set of reference patterns from a plurality of reference patterns, and
wherein the obtained reference patterns are speech reference patterns.

27. (Original) A method as recited in claim 22, wherein the key selection has a plurality of characters associated therewith, and
wherein said identifying (d) of the character that was intended to be input by the user comprises:

determining whether one of the obtained reference patterns matches the voice input based on the comparison data; and

selecting the character from the plurality of the characters associated with the key selection in accordance with the determined one of the obtained reference patterns.

28. (Currently Amended) A method as recited in claim 21, wherein said receiving (a) of the voice input is provided by the user without prompting the user to provide a voice input.

29. (Previously Added) A computer readable medium as recited in claim 13, wherein said program code for receiving of the voice input is provided by a user without prompting the user to provide a voice input.